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RELATIONSHIP BETWEEN AQB AND ACB SCORES

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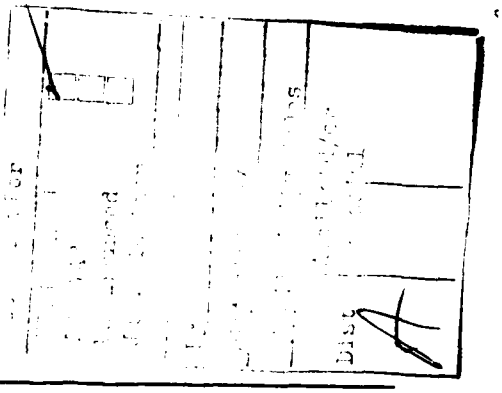

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RELATIONSHIP BETWEEN AQB AND ACB SCORES

BACKGROUND

The Army Qualification Battery (AQB) was developed in the early 1960's to serve as a supplementary screening instrument for use at the Armed Forces Entrance and Examining Stations (AFEES). It is administered to individuals who are in mental Category IV (AFQT percentile scores 10-30) and to the men desiring enlisted commitment to a specific type of training. The tests in the AQB were designed to measure the same attributes as the tests in the Army Classification Battery (ACB); the AQB, however, is shorter and is designed to make maximum discrimination at the low end of the ability continuum, whereas the ACB is designed for use with the full range of ability. Since the AQB is essentially parallel to the ACB at the lower end of the scale, AQB scores are used for classification as well as selection, except that individuals who score above 110 on an AQB test are retested with the ACB to obtain better estimates of their aptitude scores. AQB and ACB scores have been used interchangeably, except for ACB scores above 110, since the AQB was first introduced.

In 1966 when PROJECT 100,000 was initiated, the testing of lower-level men received more attention at DOD level. One aspect that was questioned was the use of a dual testing program in the Army. The question was given special attention because the Marine Corps, which also uses the ACB and AQB, tests everyone with the ACB for classification purposes, including those who have already taken the AQB. In October 1967, the Skill Development Base Ad Hoc Committee recommended to the DCSPER that the Army test all input with the ACB, including those who have taken the AQB. The DCSPER concurred with the recommendation.

The arguments advanced in favor of the ACB were that it is a better, more reliable instrument and that some Category IV personnel can improve their scores upon retesting. Another prevalent notion in the field is that inductees would improve their scores if they were tested at the reception stations with the ACB, because their motivation is higher at the reception stations after they have been inducted into the Army than at the AFEFS when they are still civilians. No reports are available to document these arguments.

Data on the relationship between AQB and ACB scores can shed some light on changes in scores upon retesting with the ACB. The arguments about improved performance on the ACB can be checked by comparing distributions for a sample tested with both batteries. These distributions cannot shed any light on the reliability or validity of the two batteries, however. Retest data on the same battery would be required to determine the reliability, and criterion data would be required to determine which battery is more valid. Any resolution to the argument about which battery is better for Category IV personnel must await further study.

PROCEDURES

A DCSPER representative arranged for AQB and ACB scores to be obtained during October 1967 for about 300 men at each of two reception stations, Fort Bragg, North Carolina and Fort Jackson, South Carolina. No attempt was made to obtain representative samples; data were collected on the groups that happened to be available. Neither installation was representative of Army input. The mean AFQT percentile score was 32.7 at Fort Bragg (N = 273) and 44.6 at Fort Jackson (N = 324), both below the population AFQT mean of 50. As a first check, the mean AQB and ACB scores were computed for each installation. Data for the two installations were then combined and personnel in mental Category IV (AFQT scores of 10 through 30) were analyzed separately from those in mental Categories I, II, and III (AFQT scores of 31 and above). Mean AQB and ACB test scores were computed for each subgroup.

RESULTS

The AQB and ACB means for the two installations are shown in Table 1. In general, the pattern of differences was the same for each installation, with most of the ACB means lower than the corresponding AQB means. Two exceptions were the Shop Mechanics test and the Classification Inventory. The ACB Shop Mechanics test mean was 5.9 points lower than the AQB SM mean at Fort Bragg (83.9 vs 89.8), while at Fort Jackson it was 1.2 points higher (106.1 vs 104.9). The Classification Inventory showed a drop of 13.63 points at Fort Bragg as compared to 3.52 points at Fort Jackson.

The explanation of the differences for the Shop Mechanics test may lie in an interaction between type of task posed by the two forms of the test and average ability level at the two installations. In the AQB form, the Shop Mechanics test has only pictorial content, while in the ACB form it involves extensive reading. The Shop Mechanics test is the only test that differs in the nature of the task; in all other tests, if the ACB version is verbal the AQB version is also verbal, and similarly for a non-verbal test. At Fort Bragg, where the AFQT percentile score was 32.74, the sample performed better on the AQB version with the pictorial content. At Fort Jackson, where the AFQT mean was 44.63, the sample performed essentially the same in the two versions. Presumably, those with lower levels of mental ability would have more difficulty in comprehending and using verbal symbols. In the case of the much larger drop of the Classification Inventory mean at Fort Bragg as compared to Fort Jackson, the explanation appears to be clerical error because the ACB Classification Inventory at Fort Bragg was the only test deviant from the pattern of means.

Except for the Shop Mechanics test and the Classification Inventory, the AQB and ACB means showed about the same pattern of differences at the two installations. The samples were then combined for further analysis.

Table 1

MEAN SCORES BY INSTALLATION

Test	Fort Bragg (N = 273) AQB[a]	Fort Bragg (N = 273) ACB[b]	Fort Jackson (N = 324) AQB[a]	Fort Jackson (N = 324) ACB[b]
Verbal	90.90	91.87	99.81	102.74
Arithmetic Reasoning	88.11	88.41	98.11	94.77
Shop Mechanics	95.48	88.46	97.47	98.35
Pattern Analysis	89.82	89.73	98.34	96.91
Army Clerical Speed	100.14	102.97	109.26	104.00
Automotive Information	93.94	90.57	96.94	96.33
Mechanical Aptitude	94.18	90.90	100.01	97.22
Electronics Information	95.64	91.08	99.45	92.54
General Information	89.42	88.27	95.89	93.16
Classification Inventory	90.82	77.19	95.27	91.75
	AFQT 32.74		AFQT 44.63	

[a] Army Qualification Battery, administered at various Armed Forces Entrance Examining Stations.

[b] Army Classification Battery, administered at the reception station listed at the top of the column.

The combined sample was divided into two groups: mental Category IV and those above Category IV. Mean AQB and ACB scores were computed for each group. The results are presented in Table 2. Most of the Category IV group was from Fort Bragg, whereas most of the Category I, II, and III group was from Fort Jackson. Thus, any differences between installations were confounded with the differences reported in Table 1. The Classification Inventory showed a larger drop for the Category IV group, but this drop reflects the difference between the installations.

Table 2

MEAN TEST SCORES BY MENTAL CATEGORY

Test	Mental Category IV (N = 330) AQB[a]	ACB[b]	Mental Categories I,II,III (N = 267) AQB[a]	ACB[b]	TOTAL (N = 597) AQB	ACB
Verbal	83.9	85.8	110.4	112.5	95.73	97.77
Arithmetic Reasoning	80.4	80.7	109.7	105.7	93.54	91.86
Shop Mechanics	89.8	83.9	104.9	106.1	96.56	93.83
Pattern Analysis	82.6	81.5	109.0	108.6	94.44	93.63
Army Clerical Speed	97.1	95.4	114.9	113.6	105.09	103.53
Automotive Information	89.9	86.0	102.4	103.2	95.56	93.70
Mechanical Aptitude	88.3	84.9	108.1	105.4	97.34	94.33
Electronics Information	90.0	82.5	107.2	103.4	97.71	91.87
General Information	81.9	79.7	106.5	104.8	92.93	90.92
Classification Inventory	85.9	73.4	102.3	99.6	93.23	85.10

[a] Army Qualification Battery, administered at various Armed Forces Entrance Examining Stations.

[b] Army Classification Battery, administered at Fort Bragg and Fort Jackson.

For both groups in Table 2, the ACB means tended to be lower than the AQB means. The only consistent exception was the Verbal Test, which showed a rise of about 2 points in both groups. For three tests, Arithmetic Reasoning, Shop Mechanics, and Automotive Information, the AQB mean was higher in one group but lower in the other. For all other tests, the ACB means were lower in both groups.

The drop in ACB means was larger on the average in the Category IV group than in the other group. Excluding the Classification Inventory, the mean difference was 2.6 points in the Category IV group and 1.1 points in the higher mental group.

CONCLUSIONS

The results do not support the argument that performance of Category IV personnel will improve on the ACB. Although some individuals improved their scores, the group as a whole had lower scores, and the drop in performance was greater for Category IV personnel than for those in the higher mental categories. Retesting with the ACB is considered more likely to benefit those in mental Categories I, II, III, in view of the fact that a larger percentage of them improved upon retesting with the ACB. Nor do results support the notion that inductees would achieve higher scores if the tests were given at reception stations. The inductees could not be separated because the data required for identification were not available, but the decline in ACB means suggests that the performance of the inductees also declined. All the inductees tested with the AQB at the AFEES were in mental Category IV, and it was this group that showed the larger overall decline.

The data raise more questions than they answer. The ACB Electronics Information test showed a consistently large drop. This result may be a function of differences in the score scales, or it may be peculiar to the samples. The Shop Mechanics test raises some interesting questions. The mean was 1.7 points lower on the nonverbal AQB version than on the largely verbal ACB version. Which score is a more valid measure of aptitude in the area? It is possible that the nonverbal test is more valid for the Category IV persons, while the verbal test is a better measure for those who have greater facility with verbal symbols. To answer these questions, further data would have to be collected.